

WATER

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# **SOLID WASTE MANAGEMENT PLAN for SANTA CLARA COUNTY**

## **SUMMARY REPORT**

**DECEMBER 1975**

**prepared for  
SANTA CLARA COUNTY  
BOARD OF SUPERVISORS**

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## DEFINITIONS

### WASTES

#### Group 1

Group 1 wastes consist of or contain toxic substances and substances which could significantly impair the quality of usable waters. Examples are acids, alkalies, pesticides, and chemical toilet wastes.

#### Group 2

Group 2 wastes consist of or contain chemically or biologically decomposable material, which does not include toxic substances nor those capable of significantly impairing the quality of usable waters. Examples are garbage, rubbish, street refuse, dead animals, and agricultural crop residues.

#### Group 3

Group 3 wastes consist entirely of nonwater soluble, nondecomposable inert solids. Examples are dirt, rock, concrete, and asphalt.

### DISPOSAL SITES

#### Class I

Class I disposal sites are those at which complete protection for the quality of groundwaters, surface waters, public health, and wildlife resources is provided for all time from wastes deposited therein. These sites are designated as capable of accepting for disposal Group 1, 2, and 3 wastes.

#### Class II

Class II disposal sites are those at which protection to groundwaters, surface waters, public health, and wildlife resources is provided from Group 2 and 3 wastes.

#### Class III

Class III disposal sites are those at which protection to water quality is provided from Group 3 wastes by location, construction, and operation which prevent erosion of deposited material.

Source: Subchapter 15 of the Administrative Code of the State of California adopted March 2, 1972.



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**M&E** Metcalf & Eddy | Engineers  
Boston New York Palo Alto Chicago New Haven

A summary of the solid waste management plan for Santa Clara County is presented in this document. Details of the analyses that led to the recommended plan are presented in a separate volume.

# CONTENTS

	Page
INTRODUCTION.....	1
State Law Requirement for County Plan.....	1
Purpose of the Plan.....	1
EXISTING AND FUTURE CONDITIONS.....	3
ALTERNATIVE SYSTEMS.....	7
RECOMMENDED SOLID WASTE MANAGEMENT PLAN.....	9
Recommended System.....	9
Recommended Facilities Plan.....	11
Minimum Standards for Solid Waste Handling and Disposal.....	14
SOLID WASTE MANAGEMENT PROGRAMS.....	14
Planning and Coordination of Ongoing Activities.....	16
Enforcement of Storage and Collection Regulations....	16
Enforcement of State Disposal Standards.....	17
Management of Group 1 and Special Wastes.....	18
Management of Group 2 and 3 Wastes.....	19
Development of Transfer, Processing, and Conversion Facilities.....	20
FINANCIAL IMPACT.....	22
IMPLEMENTATION.....	25
Enforcement.....	25
Stage 1 of Resource Recovery.....	27
Action by Cities.....	29



## TABLES

No.		Page
1	Estimated Present Solid Waste Quantities.....	4
2	Existing Conditions.....	5
3	Projected Lives of Existing Disposal Sites.....	6
4	Solid Waste Processing and Recovery Techniques...	8
5	North County Facilities Plan.....	13
6	Recommendations for Group 1 and Special Waste Management.....	18

## FIGURES

No.		Page
1	Recommended Administration for Processing Stations and Landfill Management.....	21
2	Effect of Plan on Single-Family Dwelling Service Charges.....	23
3	Implementation Schedule Enforcement of Health and Operations Standards.....	26
4	Implementation Sequence Stage 1 Resource Recovery.....	28

## MAPS

No.		Page
1	North County Plan - Location of Facilities.....	12

## INTRODUCTION

### STATE LAW REQUIREMENT FOR COUNTY PLAN

The California Solid Waste Management and Resource Recovery Act of 1972 established several important policies for solid waste management within the state. The legislation required, among other things, that every county prepare a comprehensive solid waste management plan. Before the plan is adopted as official county policy, it must be approved by the county and a majority of the cities within the county that also represent a majority of the population in the incorporated areas. The plan is then forwarded to the State Solid Waste Management Board (SSWMB) by January 1, 1976. After the SSWMB determines that the plan meets the state's approval, it becomes the official countywide plan.

### PURPOSE OF THE PLAN

The mounting problem of what to do with the increasing quantities of solid wastes generated within Santa Clara County can become critical if left unchecked. A growing scarcity of land in an urbanized county creates an intensive competition among the many uses the land must support. And solid waste disposal is a necessary use that, if improperly planned and supervised, may impair the land for other uses.

Some disposal sites that now serve the county and its cities will begin to reach their planned capacities relatively soon. Locating new disposal sites in an urbanizing county is a long process that must be properly planned. Furthermore, there is a recognized need and some public desire to recover those portions of the wastes for which there are identified or potential markets.



Santa Clara County arranged for the preparation of the plan to fulfill its responsibilities under the 1972 act and to meet its needs in the management of solid wastes. The purpose of the plan is to ensure economical and dependable collection, processing, resource recovery, and disposal of solid wastes in a manner that safeguards the health of the public and provides maximum protection of the environment.

The plan covers a period from the present through the year 2000. It is specific enough to be effective, yet flexible enough to allow for unforeseen developments in Santa Clara County and in the solid waste field. Proven processing and disposal methods were relied upon to develop the recommendations of the plan. Where technologies and markets have not been developed on a municipal scale, further study and market development is recommended. Santa Clara County's success in implementing the plan depends on its flexibility to adapt to new methods and technologies when they become practical for local use.

The steps in developing this solid waste plan have included the following:

- An inventory and analysis of existing conditions and a forecast of future conditions
- Development and analysis of alternative systems
- Selection of the recommended system
- Delineation of management programs
- Analysis of financial impact
- Implementation scheduling



## EXISTING AND FUTURE CONDITIONS

The rapid growth experienced by Santa Clara County in the past 25 years is expected to continue into the future at a slightly reduced pace. In 1950, the county's population was 290,547; by 1970, it was 1,065,313. Countywide population is expected to increase to 1,307,500 by 1980; to 1,570,000 by 1990; and to 1,752,000 by 2000.

Growing numbers of people will produce increasing quantities of wastes that must be managed in an economical and environmentally sound manner. At present, over 27,000 tons of residential, commercial, industrial, and construction-demolition wastes are generated and must be disposed of every week, as shown in Table 1. This quantity is expected to increase to 31,900 tons by 1980; to 40,500 tons by 1990, and to 47,800 tons by 2000. In addition to these wastes, there are special wastes, such as agricultural wastes, food processing wastes, sewage sludges, septic tank pumpings, and scrapped automobiles, that require individually different methods of handling and disposal.

The existing solid waste system consists primarily of collection, haul, and disposal. Limited resource recovery is accomplished by commercial and industrial establishments that separate corrugated paper, metals, and wood for separate collections, and by community recycling centers that accept a number of materials delivered by householders. A high percentage of wastes generated in the county are collected by private collection firms and disposed of in 14 landfill sites located throughout the county. Each municipality presently franchises collection and disposal of wastes, as shown in Table 2.

Table 1. ESTIMATED PRESENT SOLID WASTE QUANTITIES  
Tons/week

Municipalities and selected unincorporated areas	1975 population <sup>a</sup>	Collected solid wastes				Non- collected solid wastes <sup>c</sup>	Construction- demolition	Total quantity disposed of <sup>d</sup>
		Residential	Commercial <sup>b</sup>	Industrial	Total			
Campbell	34,100	310	140	95	545	18	164	727
Cupertino	28,700	260	143	40	443	16	166	625
Gilroy	17,200	155	73	115	343	53	83	479
Los Altos	31,000	282	109	10	401	21	149	571
Los Altos Hills	11,600	106	4	0	110	5	11	126
Los Gatos	28,800	262	152	64	478	16	139	633
Milpitas	37,200	339	42	400	781	23	179	983
Monte Sereno	3,600	33	1	0	34	2	4	40
Morgan Hill	11,700	107	42	86	235	13	22	270
Mountain View	60,500	549	223	177	949	40	342	1,331
Palo Alto	59,400	540	312	552	1,404	321	285	2,010
San Jose	602,900	5,218	1,723	1,756	8,697	1,129	2,946	12,772
Santa Clara	90,800	985	430	325	1,740	303 <sup>e</sup>	628	2,671
Saratoga	31,400	286	30	0	316	12	151	479
Sunnyvale	110,250	1,198	350	822	2,370	184	636	3,190
Moffett Field	3,200 <sup>f</sup>	24	208	0	232	0	15	247
San Martin	4,200	10	2	21	33	20 <sup>g</sup>	8	61
Stanford	10,900	99	70	0	169	0	63	232
Remainder unincorporated	6,050	32	0	0	32	15	12	59
Total	1,183,500	10,795	4,054	4,463	19,312	2,191	6,003	27,506

a. Municipal populations shown include unincorporated areas within and adjacent to municipal boundaries.

b. Commercial wastes include institutional wastes.

c. Wastes taken by private parties directly to disposal sites.

d. Total quantities do not include special wastes such as sewage sludges, septic tank sludges, abandoned automobiles, or street sweepings.

e. Includes industrial wastes from Owens Corning Fiberglas.

f. Includes married military housing located adjacent to Moffett Field.

g. Includes wastes delivered to San Martin transfer station.



Table 2. EXISTING CONDITIONS

Jurisdiction	Maximum residential container		Location, residential collection	Residential rate, each dwelling unit		Billing responsibility	Franchise holder	Disposal site used
	Size, gal.	Weight, lb		No. of containers	Cost per mo, \$			
Campbell	32	75	Backyard <sup>a</sup>	1	2.00	By collector	Green Valley Disposal Co., Inc.	Guadalupe
Cupertino	32	70	Curb	2	2.65	By collector	Los Altos Garbage Co.	Nine Par
Gilroy	NS	50	Backyard	1 <sup>b</sup>	2.55	By collector	South Valley Refuse Disposal, Inc.	Pacheco Pass
Los Altos	30	NS	Backyard	1	3.00	By collector	Los Altos Garbage Co.	Nine Par
Los Altos Hills	30	NS	Backyard <sup>c</sup>	1	5.40	By collector	Los Altos Garbage Co.	Nine Par
Los Gatos	30	NS	Backyard <sup>c</sup>	1	2.00	By collector	Green Valley Disposal Co., Inc.	Guadalupe
Milpitas	32	75	Curb	3	2.75	Residential by city; others by collector	Browning-Ferris Industries of Northern California, Inc.	Newby Island
Monte Sereno	100	NS	Curb	1	2.00	By collector	Green Valley Disposal Co., Inc.	Guadalupe
Morgan Hill	32	70	Backyard Curb	1 2	2.20 <sup>d</sup>	Residential and commercial by city; industrial by collector	South Valley Refuse Disposal, Inc.	Pacheco Pass
Mountain View	32	75	Curb	Unlimited	1.86	By city	Foothills Disposal Co., Inc.	Mountain View
Palo Alto	32	60	Backyard	2	2.40	By city	Palo Alto Sanitation Co.	Palo Alto
San Jose	32	75	Curb	3	2.30	By collector	Browning Ferris Industries of Northern California, Inc.	Newby Island
Santa Clara	32	75 garbage 70 rubbish	Backyard Curb	1 garbage Unlimited rubbish	1.75	By city	Mission Trail Garbage Co., Inc.	Nine Par
Saratoga	32	75	Backyard	1	2.00	By collector	Green Valley Disposal Co, Inc.	Guadalupe
Sunnyvale	32	75	Curb	Unlimited	2.00	By city	Speciality Garbage and Refuse Service, Inc.	Sunnyvale
Unincorporated County	32	75	Backyard	1	3.00	By collector	--	--

NS = not specified.

a. No more than 50 ft from curb.

b. No limit on garden refuse which must be placed in containers for collection at curb.

c. No more than 100 ft from street.

d. Monthly cost entitles resident to 1 garbage container in yard and 2 refuse containers at curb.

Group 2\* waste collection is quite satisfactory. Franchised collection service operators provide safe, reliable, and economical service, and they comply with the pending state minimum standards for solid waste collection and collection equipment.

At the projected rates of waste production, the estimated remaining lives of existing disposal sites range from less than 1 year to more than 25 years, as listed in Table 3.

Table 3. PROJECTED LIVES  
OF EXISTING DISPOSAL SITES

	Estimated landfill closing date	Years remaining
Guadalupe	2000+	25+
Marshland Development	1976	1/2-1
Moffett Field	2000+	25+
Mountain View	1990	15
Newby Island	1990	15
Nine par	1984	9
Owens Corning	1985+	10+
Pacheco Pass	2000+	25+
Palo Alto	1981	6
San Jose Disposal Grounds	1978	3
San Martin	1984	9
Santa Clara	2000	25
Stierlin Road	1990	15
Sunnyvale	1981	6

The most immediate landfill need is in the northwestern portion of the county. The cities of Sunnyvale, Cupertino, Palo Alto, Los Altos, and Los Altos Hills must all find and develop additional landfill capacity within the next 10 years.

The cities of San Jose and Milpitas have a long-term landfill replacement need if full-scale energy recovery is not

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\*Definitions of waste groups and disposal site classes are presented on the inside front cover.



implemented before 1990. The City of Santa Clara and those cities served by the Guadalupe and Pacheco Pass disposal sites presently have, or have provided for them by their franchised collector, adequate landfill capacity to serve their needs through 2000.

The types of solid waste processing and recovery methods that will be used in the future can be expected to vary markedly from those in municipal use today, for there are many new processes now in the conceptual and developmental stage. Both proven and developmental methods for processing and recovering solid wastes are listed in Table 4. Of these methods, only hand-sorting and baling are now widely used for source separation in Santa Clara County. Shredding, magnetic separation, and air separation are the only sizing and centralized separation methods that have been proven in full-scale applications. Composting and incineration with heat recovery are the only proven conversion methods. The others are in various stages of development.

#### ALTERNATIVE SYSTEMS

For planning alternative systems, the county was divided into two parts: (1) the urban northern portion, and (2) the more rural southern portion (from Coyote south).

The alternatives ranged from a continuation of landfilling with no resource recovery, to central resource recovery accomplished at shredding and material recovery facilities, to full-scale energy recovery.

Shredding is a process that grinds solid wastes to smaller, more uniform particle sizes and allows subsequent separation of secondary materials, such as ferrous metals, aluminum,

Table 4. SOLID WASTE PROCESSING AND RECOVERY TECHNIQUES

Technique	Resource recovered	Prerequisite techniques desired	Comments
SOURCE SEPARATION			
Hand-sorting	Paper, ferrous and nonferrous metals, wood	None	Economically feasible to separate corrugated and high-quality paper, metals, and wood at commercial and industrial sites and newspaper at residences if market prices are adequate.
Baling	--	Hand-sorting	Used to increase transportation efficiency and lower transport costs.
SIZING			
Shredding (milling)	--	None	Used to effect particle size and uniformity; proven in numerous full-scale applications.
Wet pulping	--	None	Used to effect particle size and uniformity; proven in 150 ton/day municipal plant.
CENTRALIZED SEPARATION			
Handpicking and sorting	Newspaper, corrugated paper	None	May be economical alternative to source separation.
Magnetic separation	Ferrous metal	Shredding or wet pulping	Proven in numerous full-scale applications.
Air separation	Combustible materials for use as fuel	Shredding	Used to concentrate metals and glass in a heavy fraction as well as combustible materials in a light fraction; proven in a number of pilot applications.
Screening	--	Shredding, air separation	May also be used prior to milling to reduce mill size, and prior to air separation for similar reasons. Can be used to concentrate glass-rich fraction from heavy fraction; proven in a few pilot applications.
Flotation	Glass	Shredding, air separation	Proven in pilot applications only.
Heavy media separation	Aluminum, other nonferrous metals	Shredding, air separation	May be used to separate a number of materials by adjusting specific gravity of media; separate units are required for each material to be separated; proven in a few pilot applications.
Optical sorting	Glass	Shredding, air separation, and screening	May be used as an alternative to flotation to separate glass from opaque materials; also used to separate flint from colored cullet; proven in pilot applications.
Eddy-current metal separation	Aluminum, other nonferrous metals	Shredding, air separation, magnetic separation, and screening	Separate units are required to separate aluminum and other nonferrous metals; proven in pilot applications only.
CONVERSION			
Composting	Humus-like material	Shredding, air separation	Lack of markets is primary shortcoming; technically proven in full-scale applications.
Incineration with heat recovery	Energy in the form of steam	None	Markets for steam must be available; proven in numerous full-scale applications; air quality laws in Bay Area may prohibit use.
Supplementary fuel firing	Energy in the form of steam	Shredding, air separation, and magnetic separation	If least capital investment desired, existing boiler must be capable of modification; air quality laws in Bay Area may prohibit use.
Fluidized bed incineration	Energy in the form of electrical power	Shredding, air separation, and magnetic separation	Combustion Power Company's pilot plant in Menlo Park is an example; fluidized bed incinerator can also be used for industrial sludges; air quality laws in Bay Area may prohibit use.
Pyrolysis	Energy in the form of gas or oil	Shredding, magnetic separation	Technology proven only in pilot applications; even though pollution is minimized, air quality laws in Bay Area may prohibit use.
Hydrolysis	Glucose, furfural	Shredding	Technology on laboratory scale only.
Biological conversion to protein	Protein	Shredding	Technology on laboratory scale only.
Chemical conversion	Oil, gas, cellulose acetate	Shredding	Technology on laboratory scale only.
Anaerobic digestion	Methane gas	Shredding, air separation	Technology on laboratory scale only.



and glass. It is also required for almost all conversion methods that are in use or are being developed today. For these reasons, shredding was included as a basic process in most of the alternatives that were developed.

## RECOMMENDED SOLID WASTE MANAGEMENT PLAN

### RECOMMENDED SYSTEM

The solid waste management system recommended for the North County calls for a development program in three phases:

1. Use of upgraded existing disposal sites from 1976 to 1980.
2. Construction and use of processing facilities (for shredding and ferrous metal recovery) to be in operation by 1980 or thereafter as a first stage of resource recovery, with continued use of remaining landfills.
3. Eventual construction and use of an energy recovery plant(s) as a second stage of resource recovery. The energy recovery facilities would use the shredded wastes produced by the processing facilities.

Only a phased development program can provide the desired reliability, flexibility, and resource recovery suitable for a long-term plan for Santa Clara County. The alternative that included energy recovery is the most desirable one from an overall standpoint. However, the technology to accomplish energy recovery in an environmentally acceptable manner has not been demonstrated to a degree that could justify immediate implementation in Santa Clara County. For this reason, energy recovery has been delayed while numerous developmental programs across the country are completed.

The recommended North County system is the most economical means of increasing resource recovery within that area. The shredding system costs more than a system of transfer and disposal without shredding, but it does offer the potential for revenues from recovered materials that could partially offset the higher costs. In addition, the recommended system offers full convenience to the haulers and to the public, significantly decreases the traffic entering landfills, and provides for the efficient handling of solid wastes with minimal environmental damage.

Markets for recovered materials fluctuate more than markets for energy. Relatively stable markets do exist for aluminum and color-sorted glass but the technology has not been satisfactorily demonstrated to warrant the capital investment projected for the recovery processes. At this time the only materials recovery process that justifies its investment is magnetic separation of ferrous metals. Prior to building the processing stations, however, an in-depth market survey should be undertaken to determine specifically which materials recovery processes are justified at that time.

Any solid waste management system--no matter how sophisticated the processing or how extensive the recovery--will produce a nonsalvageable residue that must be disposed of in sanitary landfills. In the event of natural or other disasters that may temporarily disable a processing or energy recovery plant, landfills are required as contingency disposal sites. Landfills therefore must be a part of any solid waste management plan.

The solid waste management system recommended for the South County calls for a continuation of the existing system of transfer and disposal of all wastes by sanitary landfill.



This includes use of the San Martin transfer station for wastes hauled by the public and long-term use of the Pacheco Pass landfill as the exclusive Class II site. Implementation of centralized resource recovery in this rural area is not economically justified now or in the foreseeable future.

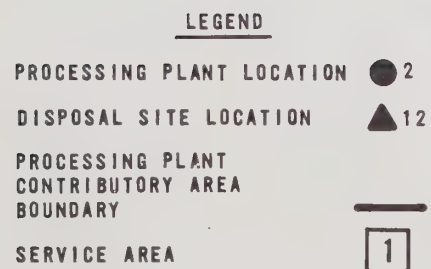
Source separation--separation of wastes at the point of their generation--will be encouraged throughout the county.

#### RECOMMENDED FACILITIES PLAN

The recommended facilities include existing landfills during the short-term period (1976-1980) supplemented by three processing plants after 1980. A fourth processing plant may be required in 1985, and additional landfills would be required thereafter to replace those that are expected to be completed by 1985. The proposed locations of processing facilities, their tributary areas, and the landfill sites are shown in Map 1. These facilities are described in Table 5.

In the North County, all wastes that can be shredded would be hauled to one of the processing plants. Following shredding, ferrous metals would be recovered. Additional materials recovery processes would be added to each plant as the technology is demonstrated and the markets are developed. Residual wastes from each facility would be transported to sanitary landfills for disposal. The remaining capacity of nearby landfills will be used first; more distant sites will be used later.

In the South County, wastes collected by the franchised hauler will be taken directly to the Pacheco Pass disposal site. Wastes hauled by the public will be taken to the San Martin transfer station and then transported to the Pacheco Pass site.



MAP 1 - NORTH COUNTY PLAN - LOCATION OF FACILITIES



Table 5. NORTH COUNTY FACILITIES PLAN

	Location No. <sup>a</sup>		Operating years		Quantity, tons/wk <sup>b</sup>		Disposal site used <sup>c</sup>
			Initial	Final	Initial	Final	
Short-term landfills <sup>d</sup>	10	Palo Alto	1976	1979	2,280	2,410	--
	11	Mountain View	1976	1979	11,360	11,450	--
	12	Sunnyvale	1976	1979	2,640	2,910	--
	13	Santa Clara	1976	1979	1,970	2,130	--
	14	Nine Par	1976	1979	1,070	1,210	--
	15	Newby Island	1976	1979	13,080	14,330	--
	16	Guadalupe	1976	1979	1,990	2,210	--
	22	Stierlin Road	1976	1979	1,870	1,970	--
	23	San Jose Disposal Grounds	1976	1978	1,170	1,230	--
	17	Hellyer Canyon <sup>e</sup>	1979	1979	1,250	1,250	--
Shredding plant	2	Mountain View, Stierlin Road <sup>f</sup>	1980 <sup>g</sup>	2000	7,390	10,340	Mountain View, Newby Island, San Bruno Canyon
	4	San Jose, Brokaw Road <sup>f</sup>	1980 <sup>g</sup>	2000	13,860	10,330	Newby Island, San Bruno Canyon
	6	San Jose South <sup>f</sup>	1985 <sup>g</sup>	2000	7,930	11,280	Hellyer Canyon
	8	Guadalupe, Guadalupe Mines Road <sup>f</sup>	1980 <sup>g</sup>	2000	1,940	3,090	Guadalupe
Medium- and long-term landfills <sup>h</sup>	10	Palo Alto	1980	1990	350	350	--
	11	Mountain View	1980	1986	10,400	7,900	--
	12	Sunnyvale	1980	1982	2,500	2,500	--
	13	Santa Clara	1980	2000	2,680	6,000	--
	14	Nine Par	1980	1982	4,490	4,790	--
	15	Newby Island	1980	2000	12,720	2,010	--
	16	Guadalupe	1980	2000	2,450	3,690	--
	22	Stierlin Road	1980	1990	890	1,030	--
	17	Hellyer Canyon <sup>e</sup>	1980	2000	2,610	14,190	--
	21	San Bruno Canyon <sup>e</sup>	1994	2000	15,170	16,800	--

NOTE: The data shown in this table supersede the alternatives presented in Chapter 12 in the plan.

a. Location refers to Map 1.

b. The quantity received at facilities is shown as a guide based on current projections of future waste quantities. Actual quantities received will be determined by future waste quantities produced, the ability of landfill site operators to meet state and local requirements, and city prerogatives to direct waste flows to a recovery or landfill facility.

c. Disposal sites used for nonrecovered wastes will be determined by each service area.

d. See Table 13-4 in the plan for details.

e. Potential landfill sites require in-depth hydrogeological and environmental investigations, followed by land use review and approval.

f. The location of shredding plants is intended to be of a general vicinity only. Any suitably zoned industrial land within a 2-mile radius of noted location is desirable. Location close to a freeway is preferable.

g. Initial year of operation to be determined by service area.

h. See Appendix Table G-12 in the plan for details. Continued use of existing landfills will be determined by ability of site operators to satisfy state and local operating and land use requirements.

## MINIMUM STANDARDS FOR SOLID WASTE HANDLING AND DISPOSAL

As directed by state law, the SSWMB has issued health and operating standards for disposal of solid wastes. These standards, now part of the California Administrative Code (Title 14, Division 7, Chapter 3), will become effective July 1, 1976. They contain provisions for storage and removal, transfer/processing stations, and disposal sites. Each county is required to designate in its solid waste management plan which agency or agencies will enforce these standards. The assignment of responsibility for enforcing these standards in Santa Clara County is discussed in the following section.

### SOLID WASTE MANAGEMENT PROGRAMS

A number of programs must be implemented to make the facilities plan a reality and to ensure that the solid waste management protects the health and well being of every community in the county and safeguards the environment. These programs include:

- Planning and coordination of ongoing activities
- Enforcement of storage and collection regulations
- Enforcement of state disposal standards
- Management of special wastes
- Management of Group 2 and 3 wastes
- Development of transfer, processing, and energy conversion facilities



Carrying out the programs will require action by many different public agencies as well as by private industry. The following general division of responsibility among public agencies and private industry is established.

- The Solid Waste Planning Committee - A Solid Waste Planning Committee (SWPC) should be designated by the Board of Supervisors and the cities as the overall coordinating and monitoring body for solid waste matters in the county. All of the committee members should be elected representatives from the county and the cities.
- County Health Department - The County Health Department will enforce state minimum standards for handling and disposal of solid wastes in unincorporated portions of the county. It may negotiate contracts with each city to perform this function in the cities.
- Joint powers agencies - The plan recommends establishing three joint powers agencies (JPA) to design and administer processing and transfer stations, and to plan landfill development. The division of the county into three independent operating authorities allows local administration to meet local needs.
- Private industry - Private industry operates almost all solid waste facilities in the county and it should have a substantial voice in advisory committees of the SWPC. It should be provided the opportunity to construct and operate recommended facilities and to finance those within its means.
- The cities - Each city will enforce or arrange for enforcement of state minimum standards for handling and disposal of solid wastes. All 15 cities in Santa Clara County franchise waste collection to private enterprise. As franchisors, the cities may control where wastes are disposed of. The cities also authorize rates charged by collectors. Finally, each city has its own municipal ordinance governing storage, collection, and disposal which must conform to state regulations.

Recommendations for each program of the plan are summarized in the following discussion.

#### PLANNING AND COORDINATION OF ONGOING ACTIVITIES

The primary responsibility for countywide planning and coordination is assigned to a Solid Waste Planning Committee. Such a committee already exists as the county's Planning Policy Committee, which has had the responsibility of coordinating this plan. The Board of Supervisors could delegate the solid waste planning function to this existing committee or to a specially appointed solid waste planning committee. The SWPC should be composed of elected officials and should have three major responsibilities: (1) preliminary planning of energy conversion facilities, (2) reviewing and updating this plan in the next 3 years, and (3) overall countywide coordination of activities.

The SWPC should appoint a Technical Advisory Committee (TAC) to assist it in its planning. Such a committee already exists as advisory to the Planning Policy Committee. The TAC should be composed of representatives of private industry, waste generators, city staff, county staff, and citizens.

#### ENFORCEMENT OF STORAGE AND COLLECTION REGULATIONS

Group 2 waste storage, regulated by municipal ordinance, is adequate in most cases. Each municipality should adopt the statewide Minimum Standards for Solid Waste Handling and Disposal by July 1, 1976. These standards are of two types: (1) health standards and (2) other standards which impinge



more on the general operation and regulation of solid waste systems. According to the standards,

It is the intent (of the standards) that the local health entity is the Enforcement Agency for Health Standards. (Section 17208)

In California, cities are constitutionally recognized as having sovereignty over most health and safety matters in their own jurisdictions. In Santa Clara County, the cities have delegated much of the enforcement of health ordinances to the County Health Department. Through this arrangement the cities do retain policymaking authority while the County Health Department is responsible for enforcement.

In recognition of the constitutional sovereignty of the cities to regulate health matters, each city in Santa Clara County is designated in this plan as its own enforcement agency. The County Health Department is designated for unincorporated areas. Each city is, of course, free to negotiate an enforcement contract with the County Health Department.

The minimum frequency of removal of both garbage and rubbish should be once a week for all areas. The cities of Morgan Hill and Palo Alto presently enforce this standard for garbage but not for rubbish. The cities of Cupertino and Los Gatos do not specify the frequency of removal in their ordinances.

#### ENFORCEMENT OF STATE DISPOSAL STANDARDS

Operating procedures at most sites presently meet many of the state standards. After July 1, 1976, the statewide minimum standards for disposal site operation will require daily

cover, among other things. Only the Mountain View, Guadalupe, and Pacheco Pass sites presently meet this standard.

Each city is designated as the enforcement agency within its jurisdiction for enforcement of state disposal standards. The County Health Department is designated for the unincorporated areas. Any city can, at its discretion, negotiate an enforcement contract with the county.

#### MANAGEMENT OF GROUP 1 AND SPECIAL WASTES

The use of existing special waste handling and disposal systems is recommended in the plan with few exceptions, as noted in Table 6.

Table 6. RECOMMENDATIONS FOR  
GROUP 1 AND SPECIAL WASTE MANAGEMENT

Waste category	Administration or coordination	Operation
Group 1	Enforcement agencies will enforce all local regulations for storage of hazardous wastes. They will coordinate with state and federal regulatory agencies. State health department is lead agency for enforcement of state regulations.	Existing private waste haulers will continue to operate. Palo Alto treatment plant and IES transfer station will serve as interim disposal points. Ultimate disposal at Class I sites outside county.
Cannery	County health department will monitor handling of cannery wastes.	Existing diskings operation will continue at CEI site. Newby Island landfill will serve as emergency disposal site.
Miscellaneous special	Enforcement agencies will monitor handling of all special wastes.	Existing special waste haulers will continue to operate.
Litter control	Litter control coordination will become a responsibility of the county. Each city will have primary responsibility for litter control and cleanup in its own jurisdiction.	The litter coordinator will propose uniform ordinances and enforcement to control litter countywide, will conduct litter control public information program, and will propose litter control programs for the future.

Group 1 waste management will become increasingly important as additional Group 1 wastes enter the system. These wastes include sludges from air and water pollution control



facilities, wastes now discharged to sewers that will not be allowed in the future, and wastes now illicitly disposed of. It is recognized in the plan that a Class I disposal site may be desirable in Santa Clara County. Analyses based on the minimal data that were available indicated that transfer and haul of Group 1 wastes to East Bay county sites is economically competitive with a local site at the present time. The state, through ACR 79, will be investigating Group 1 waste management on a regional basis in the Bay Area. Santa Clara County should support the state agencies in this effort.

#### MANAGEMENT OF GROUP 2 AND 3 WASTES

Long-term planning requires that waste flows to landfills be monitored. The data that would be obtained are needed to plan the size of energy recovery facilities, to identify long-term landfill capacity needs, and to meet state disposal standards. It is therefore proposed in the plan that each city monitor waste flows to landfills.

On the basis of the capacities of existing disposal sites and projected solid waste quantities that will be produced between now and the year 2000, two new landfills will be needed. Any new landfill will require in-depth hydrogeological and environmental investigations followed by land use approval before it can be used. A number of potential landfill sites are identified in the plan. Of those sites, the Hellyer Canyon site and the San Bruno Canyon site appear most suitable because of site capacity, access, and land availability. The Hellyer Canyon site could serve as a replacement for the San Jose Disposal Grounds when it is completed after 1978. San Bruno Canyon should be acquired prior to 1980 as a long-term reserve landfill. If these sites cannot be used, alternative locations are identified

in the plan. Private acquisition of sites is recommended where possible because this removes a financing burden from the public sector. Where private acquisition does not proceed smoothly, public purchase of landfill sites is necessary.

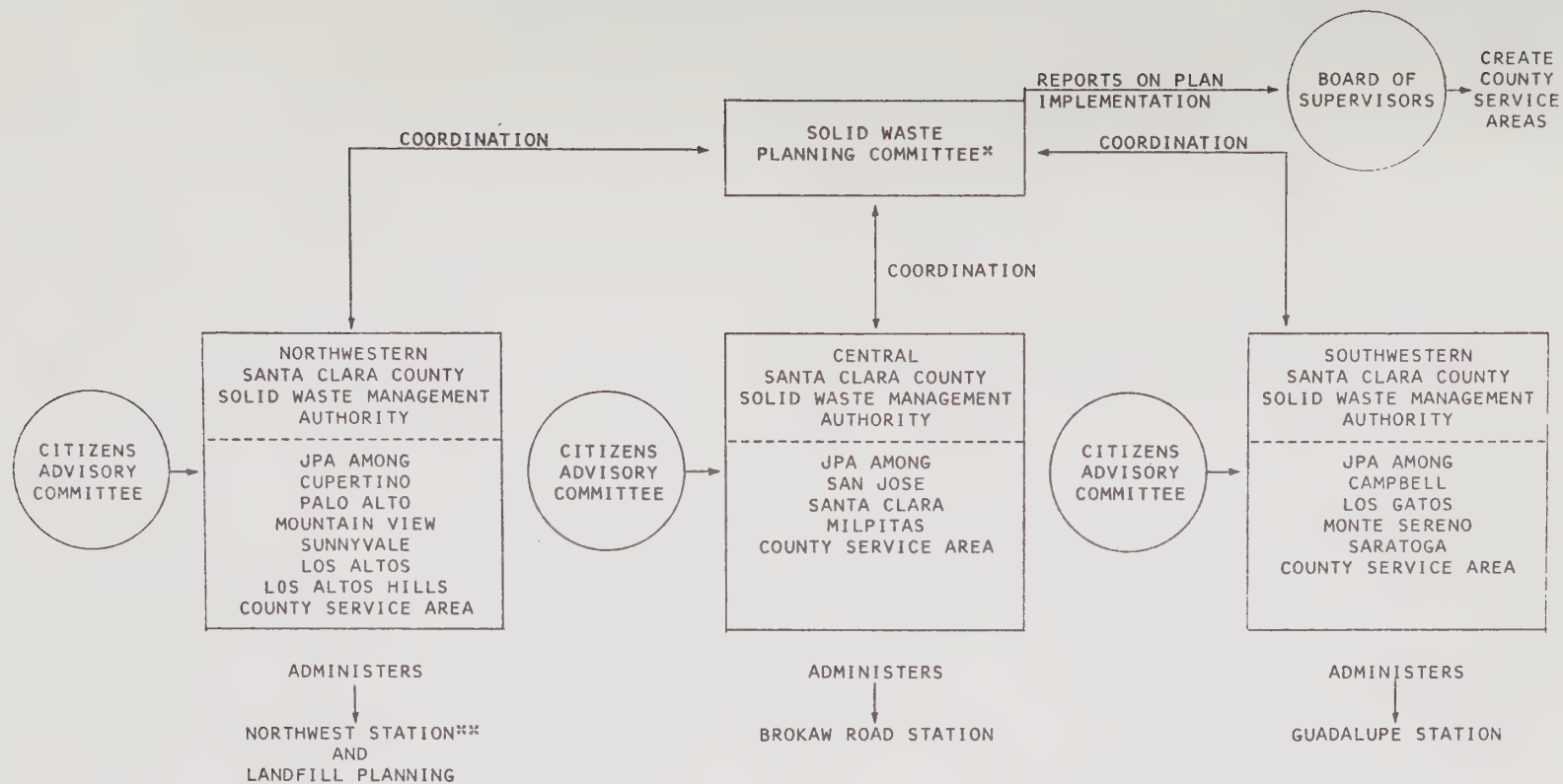
#### DEVELOPMENT OF TRANSFER, PROCESSING, AND CONVERSION FACILITIES

As mentioned previously, a two-stage resource recovery program is recommended in the plan: Stage 1 is to build processing facilities to shred wastes and recover materials; Stage 2 is to build energy recovery facilities to produce a fuel or fuel product from the combustible fraction of solid wastes. The shredded wastes produced by Stage 1 processing facilities will be used by the Stage 2 energy recovery facilities.

Each processing facility will be administered by one of the three joint powers agencies formed from cities in three service areas. The administrative structure to plan and build the processing facilities is shown in Figure 1.

#### Transfer Stations

Transfer stations can be used as a method of reducing transport costs. Solid wastes from smaller collection vehicles can be unloaded into large trailers to reduce transport costs to distant landfills. Transfer stations are not recommended in the plan at this time. However, the northwestern service area joint powers agency should examine the possibility of using one or more transfer stations as a means of reducing hauling costs to more distant landfills if a processing facility cannot be economically justified or markets for recovered materials cannot be developed.



\* SOLID WASTE PLANNING COMMITTEE IS ADVISORY TO THE BOARD OF SUPERVISORS.

\*\*\* THE NORTHWEST PROCESSING STATION LOCATION HAS NOT BEEN FINALIZED.

FIGURE 1. RECOMMENDED ADMINISTRATION FOR PROCESSING STATIONS AND LANDFILL MANAGEMENT



## Conversion Facilities

A precise plan for a solid waste conversion and energy recovery facility cannot be presented realistically at this time for either the northern or southern portions of the county because the present technology is insufficiently developed. It is therefore recommended that an in-depth energy recovery study be conducted by the SWPC during 1977. The purpose of the study would be to establish the most desirable long-term energy markets that can be satisfied by technology proven in commercial application at that time.

In addition to planning and building resource recovery facilities, Santa Clara County should adopt, through resolution, a policy to:

- Reduce waste generation
- Increase source separation
- Expand and stabilize markets for recovered materials

## FINANCIAL IMPACT

The financial impact of the plan's recommendations on the cost of collection service to a single-family dwelling is summarized in Figure 2. It is noted that the plan does not affect the costs of actual collection; its main effects are in the costs of hauling, processing, and disposing of solid wastes. This does not imply that collection costs will not increase. Those inflationary increases caused by increased labor demands, fuel costs, and equipment costs are impossible to project. Thus, for the purpose of this comparison, collection costs are assumed to be constant.

# NORTHWESTERN AREA

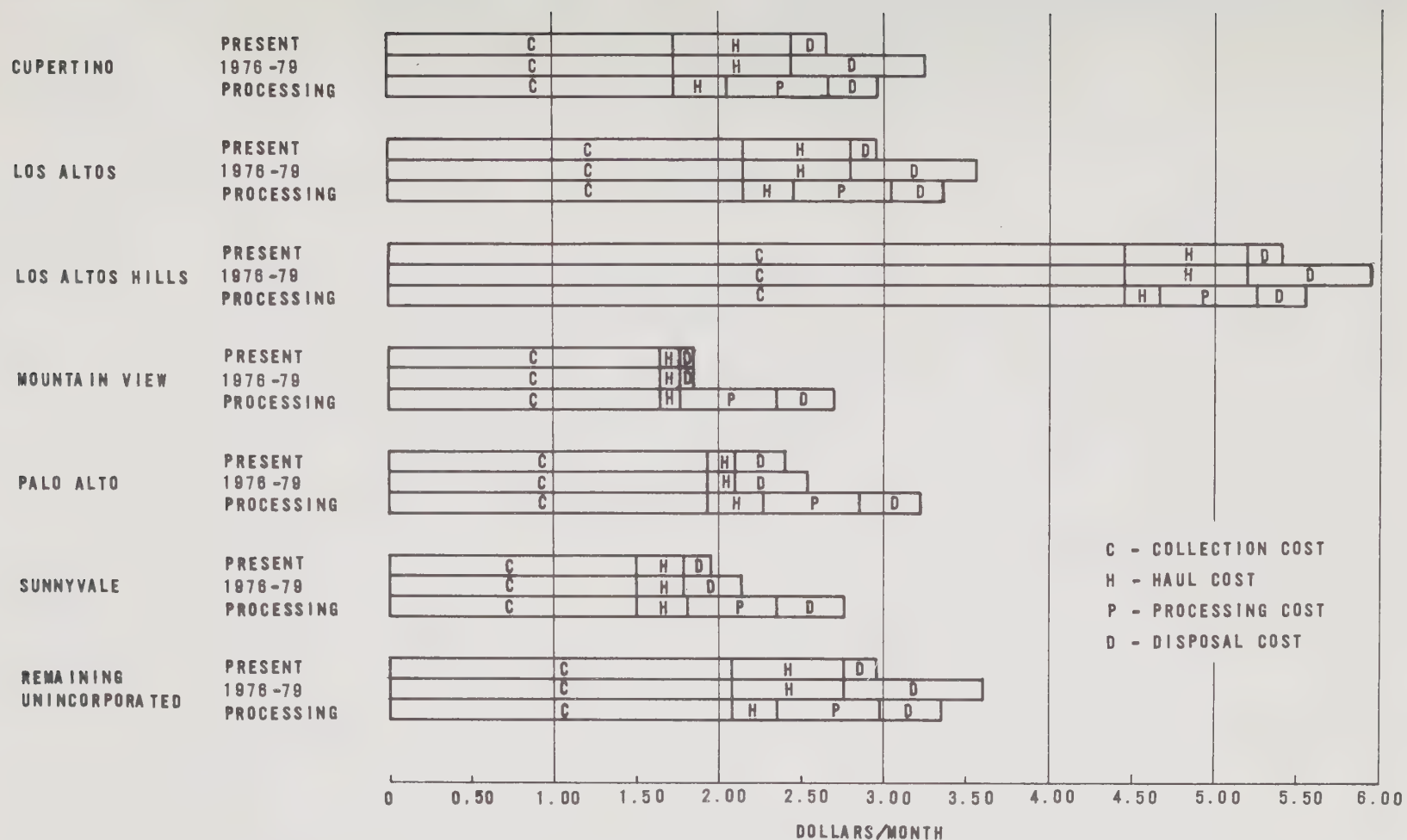


FIGURE 2. EFFECT OF PLAN ON SINGLE-FAMILY DWELLING SERVICE CHARGES

# CENTRAL AREA

MILPITAS  
PRESENT  
1976-79  
PROCESSING



SAN JOSE  
PRESENT  
1976-79  
PROCESSING



SANTA CLARA  
PRESENT  
1976-79  
PROCESSING



REMAINING  
UNINCORPORATED  
PRESENT  
1976-79  
PROCESSING



# SOUTHWESTERN AREA

CAMPBELL  
PRESENT  
1976-79  
PROCESSING



LOS GATOS  
PRESENT  
1976-79  
PROCESSING



MONTE SERENO  
PRESENT  
1976-79  
PROCESSING



SARATOGA  
PRESENT  
1976-79  
PROCESSING



REMAINING  
UNINCORPORATED  
PRESENT  
1976-79  
PROCESSING



C - COLLECTION COST  
H - HAUL COST  
P - PROCESSING COST  
D - DISPOSAL COST

0 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00  
DOLLARS/MONTH

FIGURE 2 (CONT'D).



Service charges in Figure 2 are shown for each city under three different conditions. The top bar for each city shows the present cost of service with its three components--collection, haul, and disposal. The second bar shows the cost of service to meet state minimum standards from 1976 to 1979. During this period no change in disposal point for each city is contemplated. The only change in costs will accrue from increased disposal costs necessary at each site to meet more stringent landfill operation standards. The third bar for each city shows the cost of Stage 1 of resource recovery. The cost of processing is for shredding and magnetic separation of ferrous metals. In estimating the cost of processing, no revenues were assumed for the first 2 years of operation of the processing facility. This conservative assumption provides for a period to stabilize operations and fully develop markets prior to the time that revenues are used to offset gate fees for processing.

## IMPLEMENTATION

### ENFORCEMENT

Steps to be taken by each city and the county to enforce state minimum standards are shown in Figure 3. After approving the plan, each city should begin to develop the ordinances necessary to enforce state standards. The cities may enforce these standards themselves or, at local option, negotiate an enforcement contract with the County Health Department. Such a contract may call for a reimbursement from the city for costs that the County Health Department incurs in enforcing the standards. State law requires that the standards be enforced beginning July 1, 1976.

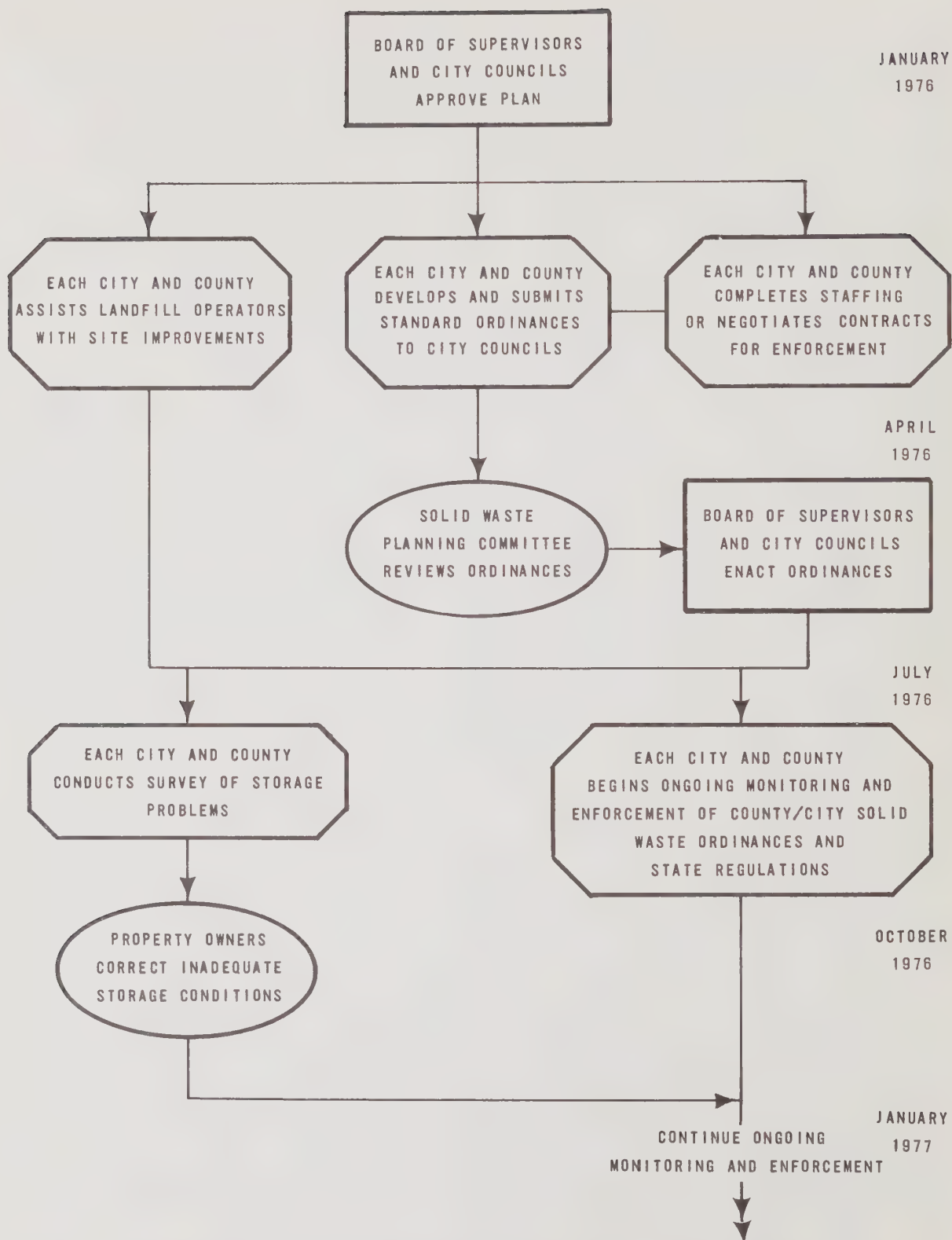


FIGURE 3. IMPLEMENTATION SCHEDULE ENFORCEMENT OF HEALTH AND OPERATIONS STANDARDS

One major action of enforcing the state standards is a survey of storage problems. This survey should begin in each city by July 1976. Upon completion of the survey, a program would be developed to correct identified inadequate storage conditions.

#### STAGE 1 OF RESOURCE RECOVERY

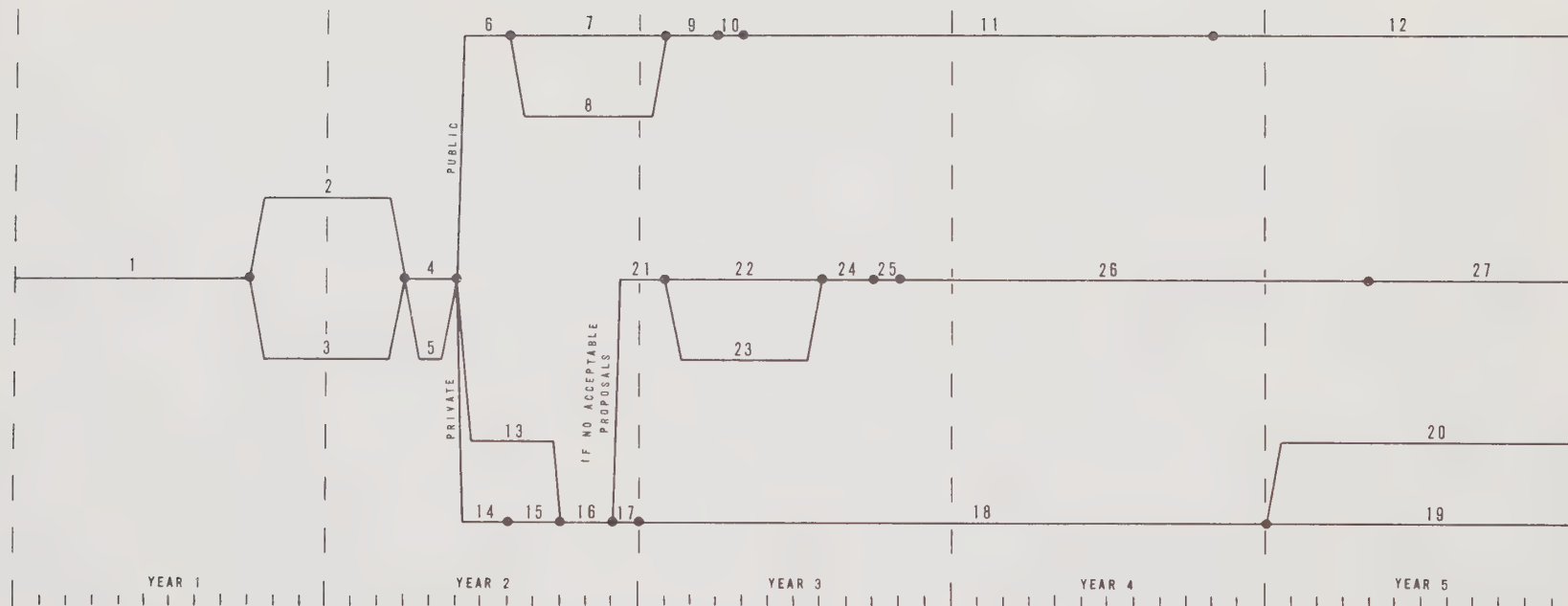
The implementation sequence for Stage 1 of resource recovery is shown in Figure 4. This sequence can be followed in each of the three service areas when the decision is made to proceed with resource recovery in that service area.

The first step will be negotiation of joint powers agreements among the cities of each service area. This negotiation may take as long as a year. Next, the preliminary design of processing stations will begin. This design will determine the extent of materials recovery to be conducted at each station. The SWPC will provide countywide coordination of this preliminary design, though each joint powers agency will conduct its own design.

After preliminary design, each joint powers agency may solicit proposals from private industry to finance, build, and operate the processing facility. Alternatively, public financing can be used if private industry proposals are not acceptable. Whether the final choice of financing is public or private, major support for the processing facility will be gate fees guaranteed by the cities through the joint powers agreements.

If the cities within the three joint powers agencies begin the process of implementing resource recovery upon approval of the plan, they could have a processing facility built by





#### IDENTIFICATION OF TASK NUMBERS

- 1 CITIES IN EACH OF THE NORTHERN SERVICE AREAS FORM JOINT POWERS AGREEMENTS FOR PRELIMINARY DESIGN FUNDING
- 2 CONDUCT PRELIMINARY DESIGN AND SELECT SPECIFIC SITES
- 3 SOLID WASTE PLANNING COMMITTEE CONDUCTS MARKET SURVEY
- 4 REVIEW PRELIMINARY DESIGN AND SELECT FINANCING APPROACH
- 5 DETERMINE INTEREST OF PRIVATE SECTOR
- 6 FORM JPA'S FOR FINANCING
- 7 PREPARE FINAL DESIGN

- 8 OBTAIN BOND AUTHORIZATION
- 9 ADVERTISE BIDS
- 10 AWARD CONTRACT
- 11 CONSTRUCTION
- 12 JPA'S OR PRIVATE SECTOR OPERATE PLANTS
- 13 DEVELOP MONITORING AUTHORITY
- 14 DEVELOP REQUEST FOR PROPOSALS
- 15 ADVERTISE REQUEST FOR PROPOSALS
- 16 EVALUATE PROPOSALS
- 17 NEGOTIATE CONTRACT

- 18 PRIVATE DESIGN AND CONSTRUCTION OF FACILITIES
- 19 PRIVATE SECTOR OPERATES FACILITIES
- 20 JPA MONITORING OF OPERATION
- 21 FORM JPA'S FOR FINANCING
- 22 PREPARE FINAL DESIGN
- 23 OBTAIN BOND AUTHORIZATION
- 24 ADVERTISE BIDS
- 25 AWARD CONTRACT
- 26 CONSTRUCTION
- 27 JPA'S OR PRIVATE SECTOR OPERATE PLANTS

FIGURE 4. IMPLEMENTATION SEQUENCE STAGE 1 RESOURCE RECOVERY

1980. Such action, however, will be determined by city councils within each service area.

#### ACTION BY CITIES

The cities control the flow of wastes to disposal points through franchise contracts with collectors and also authorize collectors' rates to reflect changes in processing and disposal costs. Before resource recovery can be implemented, the cities must agree to exercise these two powers on behalf of their service areas. From 1976 to 1979 all cities will continue to designate a landfill as the disposal point for their franchised collectors. Service charges will be adjusted to reflect increased disposal standards at landfills.

From 1980 or thereafter, with processing facilities available, cities in the northern part of the county would direct their franchised collectors to take wastes to processing facilities. Cities in the southern part of the county will continue to use landfills. Adjustments in service charges after 1980 will reflect the costs of Stage 1 of resource recovery.







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